

Arrangement of appliances for process controlDescription

5 The invention relates to an arrangement of appliances
with an information output. Appliances such as these
are, for example, sensors or measurement devices which
emit measurement values, or actuators which emit state
data, in which case the output information can be
10 passed on to another point.

Figure 2 shows one known typical arrangement. This
shows a measurement arrangement in which a first
element is the actual sensor 10 which is subject to the
15 physical influence. A second element is an information
transducer 11 which produces an analog or digital image
of the physical effect. A transmitter 12 is used as a
third element, and is required when transmission to a
display 13 is intended. In an arrangement such as this,
20 this results in a one-to-one association of the
respective function with a detecting, processing,
transmitting and display element. If a plurality of
measurement arrangements are associated with one
technical process, then at least the sensor 10,
25 information transducer 11 and transmitter 12 are in
each case required.

This also applies to active elements such as actuators,
which pass on information relating to their state or
activity. For example, a valve regulator signals either
30 the "open" state or the "closed" state, and, in the
case of a control valve, the incremental position
change is also signaled.

Since all the components for each measurement point and
35 each actuator in a process control system are used to
record, process and pass on measurement values, this
results in unnecessary redundancy. Production costs and
complexity could be reduced if only the actually

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required components were included.

The invention is thus based on the object of specifying an arrangement which results in a reduction in the overall complexity.

This object is achieved by an appliance arrangement which has the features specified in claim 1. Advantageous refinements are specified in further claims.

The invention accordingly proposes that the hardware complexity in an arrangement of instruments or actuators which are associated with a technical process and require data interchange with a central point be reduced by not allocating a transmitter or a transmitting/receiving state to all of these appliances, but by using only one jointly used transmitting/receiving device. In addition to the saving, the arrangement has the advantage that it provides a capability for information preprocessing, plausibility checking and diagnosis.

The invention and its advantages will be described further in the following text with reference to one exemplary embodiment, which is illustrated in the drawing figures, in which:

Figure 1 shows an appliance arrangement according to the invention, and

Figure 2 shows an arrangement according to the prior art.

Figure 1 shows an arrangement of appliances 2a, 2b, 2c and 2d, which are associated with a technical process 1 for open-loop and closed-loop control. The appliances 2a, 2b, 2c, 2d are, for example, instruments or

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actuators, but in any case appliances which require communication with a central point 4. In contrast to the arrangement shown in Figure 2, the appliances 2a, 2b, 2c, 2d do not, however, have any means for direct communication with the central point 4. A transmitter/receiver 3 is provided for communication with the central point 4, and can be associated with one of the appliances 2a, 2b, 2c, 2d. With regard to processing performance, memory capacity and transmission bandwidth, the transmitter/receiver 3 is designed to handle all the amounts of data which occur from all of the appliances 2a, 2b, 2c, 2d. The central point 4 may, for example, be a process control console, or its control station.

The transmitter/receiver 3 is connected to all of the appliances 2a, 2b, 2c, 2d and is designed to read the data from them either simultaneously or successively, to digitize the data if required, and to transmit it to the central point 4 using a suitable transmission protocol.

Since, in addition to instruments, actuators can also be connected to the transmitter/receiver 3, plausibility checks and diagnoses can be carried out without connection to a central point, in addition to preprocessing of so-called raw data. By way of example, a valve regulator can thus pass on information relating to the valve position to adjacent flowmeters, which themselves signal back whether the "valve closed" signal also actually results in "zero" flow.

The expressions "transmitter", transmitter/receiver" as well as "send" as used above generally represent a "transmission unit" or "transmission", that is to say they are used both for wire-free and wire-based data interchange. Examples of this are fieldbus systems, Ethernet or the HART protocol.